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EC CARDIOLOGY
Case Report

Heart Attack and Acute Stroke Happened in a 40-Year-Old Asian Woman with Newly Diagnosed Ovarian Aldosteronoma at the Same Time

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Abstract

We report a case of a 40-year-old Asian woman with medical history of hypertension for 8 years, who presented to Emergency Room (ER) with neurological symptoms as headache and dizziness, blurred vision and limb weakness for 1 day, an electrocardiogram showed ST elevation in leads consistent with acute anterior myocardial infarction. An echocardiography showed a 45% left ventricular ejection fraction (LVEF), and segmental hypokinesis of left ventricle. Coronary angiogram revealed 95% stenosis of the proximal left anterior descending (LAD) artery. Brian MRI showed acute temporal occipital cerebral infarction. The patient had no long history of hypercholesterolemia or hypertriglyceridemia. She gave birth to two kids. Subsequent pathologic findings revealed underlying ovarian aldosteronoma. She was treated multidisciplinary with good clinical outcome.

Keywords: *Hypertension; Left Ventricular Ejection Fraction (LVEF)*

Background

An aldosterone-producing adenoma (APA) is a noncancerous tumor that develops in an adrenal gland, which is a small hormone-producing gland located on top of each kidney. In most cases, individuals develop a single tumor in one of the adrenal glands. The adrenal tumor produces too much of the hormone aldosterone, which is a condition known as primary aldosteronism (PA). People with an APA may develop severe high blood pressure, and they have an increased risk of heart attack, stroke, or an irregular heartbeat. But it is rarely to find ectopic aldosteronoma located in ovary which lead to stroke and acute myocardial infarction at the same time. To our knowledge, this is the first such case ever reported.

Case Presentation

A 40-year-old Asian woman with past medical history of hypertension for 8 years, was admitted to ER and transferred to our cardiac care unit with the complaint of headache along with dizziness, blurred vision and limb weakness. Hypertension was significantly well-controlled with nifedipine 30 mg orally daily.

In the ER, initial vital signs and physical examination did not show any abnormalities. Brain CT showed nothing abnormal. ECG showed ST elevation in leads consistent with anterior myocardial infarction (Figure 1), also troponin I 42.743 ug/L, CK-MB 91 U/L, CK 908 U/L, K 3.4 mmol/L, CHO 4.54 mmol/L, LDL-C 2.98 mmol/L, HDL-C 1.17 mmol/L.

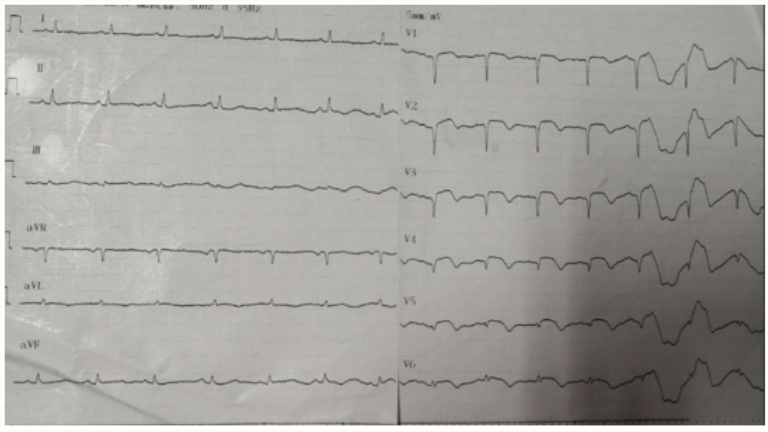

Figure 1

According to the her past history and the lab results, we preliminary considered a diagnosis of acute anterior myocardial infarction and acute stroke combined with suspicious PA, so she underwent test to screen for PA, which came back positive. Serum aldosterone (SA) was 17.5 ng/dl, plasma renin activity (PRA) 0.04 ng/ml, which gave SA/PRA > 20 (positive screening when SA > 15 ng/dl and SA/PRA > 20). Intra-venous normal saline infusion test failed to suppress SA (SA 25 ng/dl in supine position, cut-off < 10 ng/ dl), which confirmed the diagnosis of PA [1]. Hypercortisolaemia and pheochromocytoma have been excluded by normal level of serum cortisol and metanephrine. Patient underwent CT of thoracic and abdomen and pelvic without contrast. It showed nothing but a right ovarian cyst (Figure 2), which was confirmed by ultrasound (Figure 3). Subsequent brain MRI showed acute temporal occipital cerebral infarction (Figure 4).

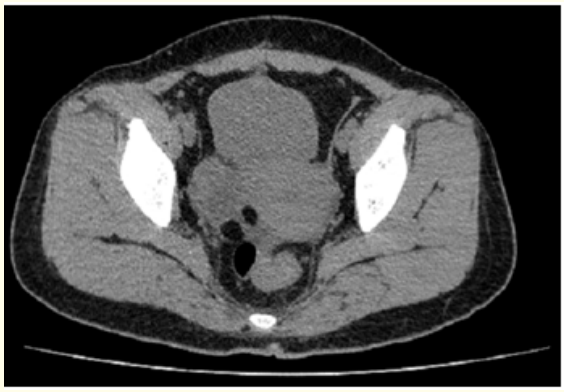

Figure 2

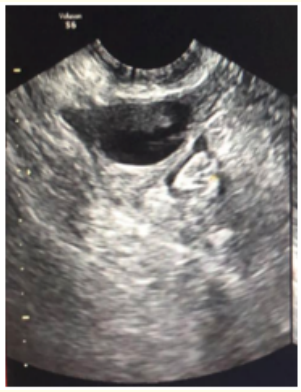

Figure 3

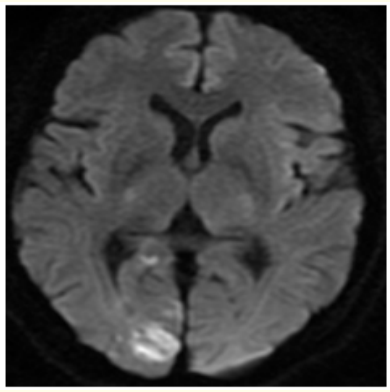

Figure 4

Treatment

Patient was started on aspirin, ticagrelor and rosuvastatin along with spirolactone. She was discharged after a few days of admission in stable condition and without any discomfort.

Outcome and follow-up

During outpatient cardiology follow-up visit 3 months later, patient remained stable condition from cardiac and neurological standpoint and repeat echocardiogram showed normal LVEF, without regional wall motion abnormalities. We performed percutaneous intervention procedure and put a stent in her LAD successfully (Figure 5). Six months later the patient underwent laparoscopic ovarian cyst removal and the pathological result showed adenoma (Figure 6A and 6B). For the moment, the patient complains nothing when taking aspirin, ticagrelor, rosuvastatin, betaloc and perindopril.

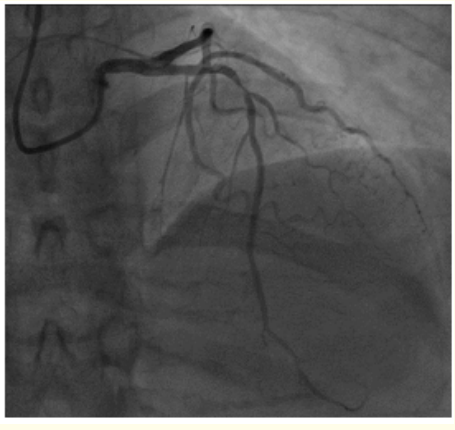

Figure 5

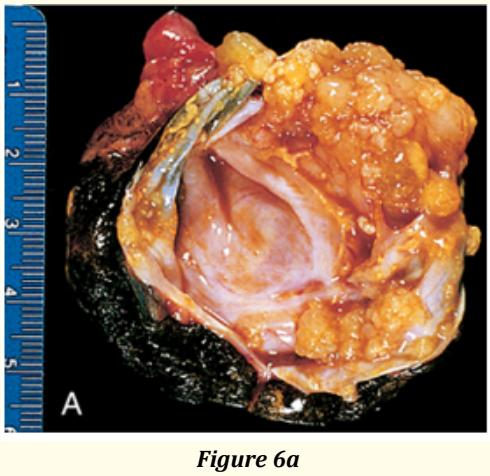

Figure 6a

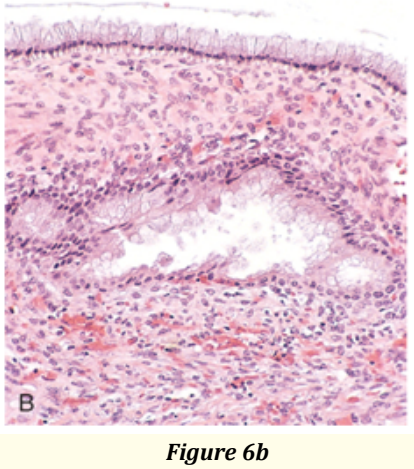

Figure 6b

Discussion

PA, also known as primary hyperaldosteronism, was first described by Jerome Conn [2] in 1955. PA or Conns syndrome is characterized by hypertension, hypokalemia, and alkalosis. This abnormality is caused by hyperplasia or tumors. Many suffer from fatigue, potassium deficiency and high blood pressure which may cause poor vision, confusion and headache [3]. Complications include cardiovascular disease such as stroke, myocardial infarction, kidney failure, and abnormal heart rhythms [4]. PA is responsible for 10% of all hyperten-

sive cases and it is the most common form of secondary hypertension. The prevalence of PA increases with a severity of hypertension, from 2% in patients with grade 1 hypertension to 20% among resistant hypertensives [5].

The most common types of PA are [3]:

1. Bilateral idiopathic adrenal hyperplasia: 66% of cases.
2. Adrenal adenoma: 33% of cases.
3. Primary (unilateral) adrenal hyperplasia: 2% of cases.
4. Aldosterone-producing adrenocortical carcinoma: < 1% of cases.
5. Familial hyperaldosteronism (FH)
   a. FH1 (glucocorticoid remedial aldosteronism): < 1% of cases.
   b. FH2 (includes IHA and APA): < 2% of cases.
6. Ectopic aldosterone-producing adenoma or carcinoma (ovarian, lung cancer) [6,7]: < 0.1% of cases.

APA is generally associated with moderate-to-severe hypertension, hypokalemia, and alkalosis. Most APAs are benign adenomas. Adrenocortical cancer is very rare. A large tumor size of > 2.5 cm has a higher potential for malignancy. Patients with APA are usually younger (less than 40 years). An effective treatment of APA is adrenalectomy, with the goal of decreasing or eliminating potassium supplementation and antihypertensive medications. Some adenomas may be detected during imaging of nonadrenal-related causes and they are referred to as incidentalomas. Less than 2% of these adenomas are secreting tumors [8].

The treatment for hyperaldosteronism depends on the underlying cause. In people with a single benign tumor, surgical removal may be curative. For people with hyperplasia of both glands, successful treatment is often achieves with spironolactone or eplerenone, drugs that block the effect of aldosterone. In the absence of treatment, individuals with hyperaldosteronism often have poorly controlled high blood pressure, which may be associated with increased rates of stroke, heart disease, and kidney failure. With appropriate treatment, the prognosis is excellent [3].

Importantly, hyperaldosteronism is considered as an independent risk factor for cardiovascular disease and increased mortality [9].

Conclusion

This case, revealed interesting concomitant finding of acute myocardial infarction (AMI) and stroke and PA. Patient's history did not show any risk factors of AMI and stroke except well-controlled moderate hypertension, in addition, her normal period is considered as a protective factor to cardiovascular and cerebrovascular disease [10]. To our knowledge, this is the first ectopic ovary PA adenoma case associated with AMI and stroke in the meantime.

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